No. 9800253

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

South Dakota Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE , OR USING IT IN ODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY TECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A F CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF TS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Forge'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of Washington, D.C. this twenty-ninth day of February, in the year of our Lord two thousand.*

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

REPRODUCE LOCALLY. *Include form number and date on all reproductions.*

FORM APPROVED - OMB NO. 0581-005

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act o 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protectio certificate is to be issued (7 U.S.C. 2421). Information is held confidentia until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
South Dakota Agricultural Experiment Station

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER
SD 3156

3. VARIETY NAME
Forge

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
South Dakota State University
Ag Hall 129
Brookings SD 57007

5. TELEPHONE *(include area code)*
(605) 688-4149

6. FAX *(include area code)*
(605) 688-6065

FOR OFFICIAL USE ONLY

PVPO NUMBER: 9800253

FILING DATE: 5/13/1998

FEES RECEIVED
FILING AND EXAMINATION FEE: $ 2450.00
DATE: 5/13/1998
CERTIFICATION FEE: $ 300
DATE: 1-18-00

7. GENUS AND SPECIES NAME
Triticum aestivum L.

8. FAMILY NAME *(Botanical)*
Graminea

9. CROP KIND NAME *(Common name)*
Hard Red Spring Wheat

10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)* *(Common name)*
Agricultural Experiment Station

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
N/A

12. DATE OF INCORPORATION
N/A

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Dr. Jackie Rudd, Spring Wheat Breeder
Plant Science Department
NPB 244D, Box 2140-C
SDSU
Brookings, SD 57007

14. TELEPHONE *(include area code)*
(605) 688-4769

15. FAX *(include area code)*
(605) 688-4452

16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow instructions on reverse)*

a. [X] Exhibit A. Origin and Breeding History of the Variety
b. [X] Exhibit B. Statement of Distinctness
c. [X] Exhibit C. Objective Description of the Variety
d. [X] Exhibit D. Additional Description of the Variety
e. [X] Exhibit E. Statement of the Basis of the Applicant's Ownership
f. [X] Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository)*
g. [X] Filing and Examination Fee ($2,460), made payable to "Treasurer of the United States" *(Mail to PVPO)*

17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)?*
[X] YES *(If "yes," answer items 18 and 19 below)* [ ] NO *(If "no," go to item 20)*

18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
[X] YES [ ] NO

19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[X] FOUNDATION [X] REGISTERED [X] CERTIFIED

20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
[X] YES *(If "yes," give names of countries and dates)* [ ] NO
U.S.A. May 1, 1997

21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*		SIGNATURE OF APPLICANT *(Owner(s))*	
Fred A. Cholick			
NAME *(Please print or type)*		NAME *(Please print or type)*	
Dr. Fred A. Cholick			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Director, SDAES	5-11-98		

SD-470 (04-95) *(Previous editions are to be destroyed)*

(See reverse for instructions and information collection burden statement)

EXHIBIT A.
Forge (SD3156)
Origin and Breeding History of the Variety

Forge is an F_6 derived line from the cross 'Butte 86/SD8061' made at Brookings, South Dakota in 1988. The pedigree of SD8061 is Sharp/Guard. The F_1 plants were grown at Weslaco, Texas during the winter of 1988-1989. Individual F_2 plant selections were made at Brookings, South Dakota in 1989 and were grown at Yuma, Arizona the following winter as plant rows. The plant rows at Yuma were harvested as rows and used to plant $F_{2:4}$ yield trials and a space planted nursery at Brookings in 1990. Based on data collected from the yield trials, individual plants were selected within the selected populations. Populations were selected based on grain yield, grain volume weight, and bread-making characteristics and individual plants were visually selected for resistance to prevalent foliar pathogens (viz. leaf rust and stem rust). Plant rows were grown in Yuma during the winter and $F_{4:6}$ yield trials and space planted nursery were conducted at Brookings in 1991. As in 1990, the yield trial data was used to identify high yielding populations and individual plants were selected within the selected populations in the space planted nursery. The F_6 plant rows were grown in Yuma and a single row was harvested and given the designation SD3156. Seed increase was conducted by the South Dakota Spring Wheat Breeding Program from 1992 through 1994. Breeders' seed was produced in 1995 and Foundation seed was produced in 1996.

Forge was tested by the South Dakota Spring Wheat Breeding Program from 1992 through 1996 and in the Uniform Regional Spring Wheat Nursery from 1995 through 1996. SD3156 was in the Spring Wheat Crop Quality Test in 1995 and 1996.

Forge has been uniform and stable for all morphological characters during the past four generations of selfing and increase. A tall variant (8 cm taller) was identified in the breeders seed at a frequency of approximately 0.1%. Up to 0.5% variant plants may be encountered in subsequent generations.

EXHIBIT B.
Forge (SD3156)
Statement of Distinctness

Forge is most similar to the hard red spring wheat cultivars 'Butte 86' and 'Sharp', but differs in the following characteristics:

Forge is 3 centimeters shorter in height than Butte 86 and Sharp (Table 1)

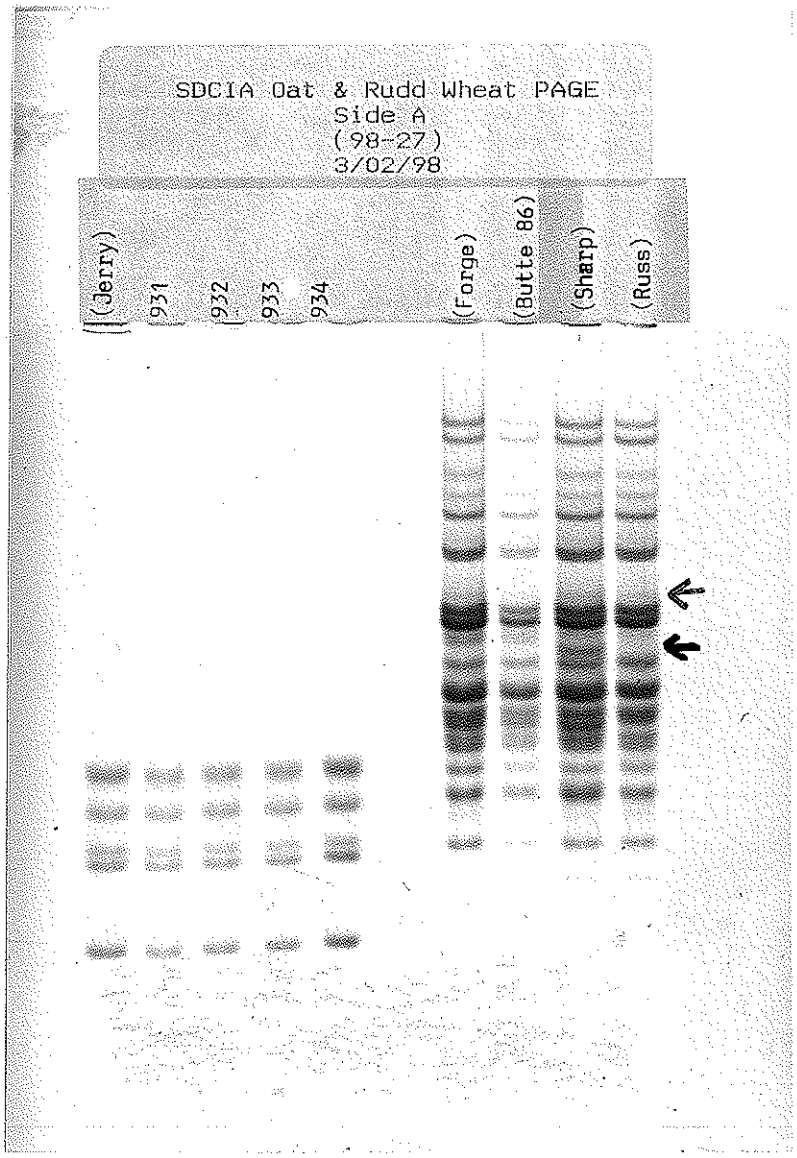
Polyacrylamide Gel Electrophoresis revealed that Forge differs from Butte 86 by at least 1 protein band and from Sharp by at least 1 protein band (Photograph 1). The red arrow on the photograph points to a band that is present in Forge and Sharp and absent in Butte 86. The black arrow points to a band that is present in Sharp but absent in Forge and Butte 86. PAGE was conducted by Dr. Brent Turnipseed, Seed Testing Lab, South Dakota State University.

Table 1. South Dakota State University, Spring Wheat Breeding Trials Combined Over Locations.

	Height (cm)				Grain Yield (bu/a)			
	95 (5)[1]	96 (7)	97 (4)	95-97 (16)	95 (6)	96 (9)	97 (7)	95-97 (22)
Forge	79.5	85.0	77.1	81.3	53.9	55.3	42.0	50.7
Butte 86	83.4	86.0	81.1	84.0	48.2	53.5	40.6	47.9
Sharp	84.7	85.8	79.3	83.9	45.3	52.1	39.3	46.2
CV%	2.4	2.6	1.4	3.9	7.2	4.5	6.7	5.6
LSD (.05)	2.3	2.1	1.5	2.5	3.7	2.0	2.6	1.4

[1] number of locations that data was collected.

Photograph 1. Acid Polyacrylamide Gel Electrophoresis (PAGE) of hard red spring wheat cultivars Forge, Butte 86, Sharp, and Russ.



Forge

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT
(*Wheat*)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*Triticum* spp.)

NAME OF APPLICANT(S)

SOUTH DAKOTA STATE AGRICULTURAL EXPERIMENT STATION

ADDRESS (*Street and No. or R.F.D. No., City, State, and Zip Code*)

South Dakota State University
Ag Hall 129
Brookings, SD 57007

FOR OFFICIAL USE ONLY

PVPO NUMBER 9800253

VARIETY NAME

Forge

TEMPORARY OR EXPERIMENTAL DESIGNATION

SD 3156

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g. [ ][ ][ ] or [ ][ ]) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: _____

Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

[1] 1=Common 2=Durum 3=Club 4=Other (SPECIFY) _____

2. VERNALIZATION:

[1] 1=Spring 2=Winter 3=Other (SPECIFY) _____

3. COLEOPTILE ANTHOCYANIN:

[1] 1=Absent 2=Present

4. JUVENILE PLANT GROWTH:

[2] 1=Prostrate 2=Semi-erect 3=Erect

5. PLANT COLOR (boot stage):

[2] 1 = Yellow-Green 2 = Green 3 = Blue-Green

6. FLAG LEAF (boot stage):

[2] 1 = Erect 2 = Recurved [2] 1 = Not Twisted 2 = Twisted

7. EAR EMERGENCE:

[0][6] Number of Days Earlier Than Chris *

[ ][ ] Number of Days Later Than _____ *

8. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

9. PLANT HEIGHT (from soil to top of head, excluding awns):

[ ][ ] cm Taller Than _____ *

[ ][2] cm Shorter Than Butte 86 _____ *

5

10. STEM:

A. ANTHOCYANIN

[1] 1= Absent 2=Present

B. WAXY BLOOM

[2] 1=Absent 2=Present

C. HAIRINESS (last internode of rachis)

[2] 1=Absent 2=Present

D. INTERNODE (SPECIFY NUMBER) _____

[1] 1=Hollow 2=Semi-solid 3=Solid

E. PEDUNCLE

[2] 1=Absent 2=Present

[41] cm Length

11. HEAD (at Maturity):

A. DENSITY

[2] 1=Lax 2=Middense 3= Dense

B. SHAPE

[1] 1 = Tapering 2= Strap 3 = Clavate 4 = Other (SPECIFY) _____

C. CURVATURE

[2] 1 = Erect 2 = Inclined 3 = Recurved

D. AWNEDNESS

[4] 1 = Awnless 2 = Apically Awnletted 3 = Awnletted 4 = Awned

12. GLUMES (at Maturity):

A. COLOR

[1] 1 = White 2 = Tan 3 = Other (SPECIFY) _____

B. SHOULDER

[2] 1 = Wanting 2 = Oblique 3 = Rounded 4 = Square 5 = Elevated 6 = Apiculate

C. BEAK

[3] 1 = Obtuse 2 = Acute 3 =Acuminate

D. LENGTH

[2] 1 = Short (ca. 7mm) 2 = Medium (ca. 8mm) 3 = Long (ca. 9mm)

E. WIDTH

[2] 1 = Narrow (ca. 3mm) 2 = Medium (ca. 3.5mm) 3 = Wide (ca. 4mm)

SEED:

A. SHAPE

[1] 1 = Ovate 2 = Oval 3 = Elliptical

B. CHEEK

[2] 1=Rounded 2=Angular

C. BRUSH

[2] 1=Short 2=Medium 3=Long

D. CREASE

[2] 1 = Width 60% or less of Kernel
2 = Width 80% or less of Kernel
3 = Width Nearly as Wide as Kernel

[1] 1 = Not Collared 2 = Collared

[2] 1 = Depth 20% or less of Kernel
2 = Depth 35% or less of Kernel
3 = Depth 50% or less of Kernel

13. SEED: (continued)

E. COLOR

9800253

[3] 1 = White 2 = Amber 3 = Red 4 = Other (SPECIFY) _____

F. TEXTURE

[1] 1=Hard 2=Soft

G. PHENOL REACTION *(see instructions)*:

[ ] 1 = Ivory 2 = Fawn 3 = Light Brown 4 = Dark Brown 5 = Black

14. DISEASE: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

Stem Rust *(Puccinia graminis* f. sp. *tritici)*
[3] field reaction

Leaf Rust *(Puccinia recondita* f. sp. *tritici)*
[2] field reaction

Stripe Rust *(Puccinia striiformis)*
[0]

Loose Smut *(Ustilago tritici)*
[0]

Tan Spot *(Pyrenophora tritici-repentis)*
[0]

Flag Smut *(Urocystis agropyri)*
[0]

Halo Spot *(Selenophoma donacis)*
[0]

Common Bunt *(Tilletia tritici* or *T. laevis)*
[0]

Septoria nodorum (Glume Blotch)
[0]

Dwarf Bunt *(Tilletia controversa)*
[0]

Septoria avenae (Speckled Leaf Disease)
[0]

Karnal Bunt *(Tilletia indica)*
[0]

Septoria tritici (Speckled Leaf Blotch)
[0]

Powdery Mildew *(Erysiphe graminis* f. sp. *tritici)*
[0]

Scab (*Fusarium* spp.)
[3]

"Snow Molds"
[0]

"Black Point" (Kernel Smudge)
[0]

Common Root Rot *(Fusarium, Cochliobolus* and *Bipolaris* spp.)
[0]

Barley Yellow Dwarf Virus (BYDV)
[0]

Rhizoctonia Root Rot *(Rhizoctonia solani)*
[0]

Soilborne Mosaic Virus (SBMV)
[0]

Black Chaff *(Xanthomonas campestris* pv. *translucens)*
[0]

Wheat Yellow (Spindle Streak) Mosaic Virus
[0]

Bacterial Leaf Blight *(Pseudomonas syringae* pv. *syringae)*
[0]

Wheat Streak Mosaic Virus (WSMV)
[0]

Other (SPECIFY) _____
[ ]

Other (SPECIFY) _____
[ ]

Other (SPECIFY) _____
[ ]

Other (SPECIFY) _____
[ ]

Other (SPECIFY) _____
[ ]

Other (SPECIFY) _____
[ ]

15. INSECT: (0=Not Tested; 1=Susceptible; 2=Resistant; 3=Intermediate; 4=Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

Hessian Fly *(Mayetiola destructor)* [0] _____ Other (SPECIFY) [ ] _____

Stem Sawfly *(Cephus spp.)* [0] _____ Other (SPECIFY) [ ] _____

Cereal Leaf Beetle *(Oulema melanopa)* [0] _____ Other (SPECIFY) [ ] _____

Russian Aphid *(Diuraphis noxia)* [0] _____ Other (SPECIFY) [ ] _____

Greenbug *(Schizaphis graminum)* [0] _____ Other (SPECIFY) [ ] _____

Aphids [0] _____ Other (SPECIFY) [ ] _____

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS:

EXHIBIT D.
Forge (SD3156)
Additional Description of the Variety

The following additional descriptive information is presented:

- Release notice of Forge
- Table 2. South Dakota performance data.
- Table 3. Uniform Regional Spring Wheat performance data.
- Table 4. 1996 Wheat Quality Council data.

Release of 'Forge' Hard Red Spring Wheat

'Forge' is an early, standard height hard red spring wheat from the cross Butte 86//Sharp/Guard. The experimental designation of Forge was SD3156. It is anticipated that Forge will be submitted for cultivar protection under the United States Plant Variety Protection Act with the certification option.

Forge has been tested in South Dakota crop performance trials since 1993, in the Uniform Regional Nursery in 1994 and 1995, and in the Wheat Quality Council trials in 1995 and 1996. Forge is phenotypically similar to Butte 86 and Sharp but is higher yielding, 1 day earlier to head, and slightly shorter. Three years of South Dakota data indicates that Forge yields 2 bushels per acre more than Butte 86 and Sharp and 1 bushel per acre less than Russ and Oxen.

Forge has a good bushel weight, similar to Sharp, and is medium in protein. The protein content is greater than Prospect but lower than Butte 86. Milling and bread-making properties of Forge are similar to Sharp. The Wheat Quality Council trials indicated that the quality of Forge is acceptable but is not as good as the check cultivar, Grandin.

Forge is resistant to the prevalent races of stem rust in South Dakota but has shown moderately susceptible reactions in inoculated nurseries. It is resistant to the prevalent races of leaf rust. It is equal to or better than 2375 for resistance to Fusarium head scab.

Table 2. South Dakota performance data.

South Dakota State University
Spring Wheat Breeding
1997 AYT - 7 Locations

AYT97 7LOC
12/30/97
C:AYT97YLD.DBF

Entry	Name	Yield (bu/a)								TW	Heading	Ht	96-97
		AUR	GRO	WAT	BTF	HIG	BRK	DAY	Average	lb/bu	days	cm	Yield
12	SD8119	49.0*	54.0	47.0*	35.9	33.6*	54.2*	43.5*	45.3*	57.6	179	81	52.3
13	SD3310	48.7*	57.3	49.7*	36.8	30.0	48.9	41.2*	44.7*	57.0	178	80	52.7
23	SD3348	49.6*	58.8	43.5	37.8*	30.2	51.8*	40.8*	44.6*	58.0	179	78	
7	OXEN	49.2*	59.8	45.5	38.1*	28.4	51.3*	37.8	44.3*	57.1	179	74	52.9
6	RUSS	50.9*	54.2	50.5*	36.6	28.7	47.6	40.5	44.1*	57.8	180	80	51.3
25	SD3355	46.5	63.8*	42.4	35.9	30.0	48.0	41.7*	44.0	55.9	180	85	
17	SD3335	47.4	51.6	48.9*	37.2*	31.9*	49.8	41.1*	44.0	58.8	179	85	
21	SD3345	46.6	53.3	46.1	36.4	32.7*	49.1	40.2	43.5	59.0	179	84	
11	SD8108	45.6	56.8	44.5	35.8	32.0*	47.5	40.6*	43.3	58.8	179	82	52.4
26	SD3356	47.4	59.4	44.8	41.2*	24.3	47.3	37.3	43.1	57.7	179	71	
33	SD3386	46.6	54.7	47.7*	35.2	28.5	45.7	40.5	42.7	56.8	180	79	
16	SD3333	47.9	50.4	43.5	37.8*	29.3	47.6	40.7*	42.5	56.9	177	73	
19	SD3337	46.0	46.3	44.5	37.8*	32.7*	49.8	38.8	42.3	58.3	179	84	
32	SD3379	47.5	55.1	44.8	34.9	28.2	47.2	38.2	42.3	57.6	179	83	
8	FORGE	47.6	51.8	39.8	35.7	30.1	47.8	41.5*	42.0	56.3	178	77	50.0
15	SD3332	45.6	53.5	44.0	35.5	26.7	49.2	39.6	42.0	56.4	179	77	
29	SD3367	46.3	49.8	45.9	35.7	29.8	45.4	41.0*	42.0	57.8	178	77	
34	SD3390	47.1	51.2	41.1	35.5	31.2*	49.7	37.5	41.9	56.7	178	79	
9	SD3219	49.9*	56.2	43.6	28.0	29.8	46.5	39.4	41.9	54.2	180	79	52.0
35	SD3391	46.4	49.3	45.2	37.9*	27.0	46.5	39.4	41.7	57.3	179	79	
20	SD3338	47.3	54.5	44.0	34.7	27.6	43.8	39.7	41.7	58.5	178	80	
30	SD3369	46.1	50.4	44.1	36.7	26.8	48.6	38.3	41.6	60.0	179	80	
27	SD3357	44.1	49.6	45.6	38.6*	27.5	42.9	41.5*	41.4	56.9	178	80	
28	SD3359	45.2	49.1	45.4	35.0	26.9	48.3	38.7	41.2	58.4	179	82	
14	SD3329	44.8	53.1	40.1	36.2	28.8	45.8	38.3	41.0	58.2	178	74	50.0
10	SD3249	46.0	50.9	41.9	34.7	26.9	47.9	37.6	40.8	60.4	178	85	47.9
2	BUTTE 86	44.5	44.9	43.2	34.0	29.7	48.3	39.5	40.6	56.4	179	81	47.7
24	SD3349	45.2	53.2	40.7	35.9	25.4	43.1	37.9	40.2	56.8	180	79	
22	SD3347	44.1	52.4	39.6	33.6	27.7	46.4	37.2	40.1	59.6	178	81	
18	SD3336	48.1	48.0	40.4	33.4	24.8	43.8	40.1	39.8	57.2	183	83	
31	SD3375	40.8	46.8	43.4	37.9*	25.3	44.8	38.0	39.6	58.0	178	72	
4	SHARP	42.4	45.2	47.4*	31.3	25.1	47.4	35.9	39.3	56.3	180	79	46.6
5	2375	46.8	46.0	39.9	30.4	25.8	42.0	37.2	38.3	58.0	181	73	46.4
36	SD3395	45.4	37.8	35.1	30.6	20.9	43.8	36.1	35.7	55.9	181	72	
1	CHRIS	38.5	31.9	36.2	20.8	17.6	30.5	28.3	29.1	52.1	184	90	35.9
	Mean	46.3	51.5	43.7	35.1	28.1	46.8	39.0	41.5	57.4	179	79	
	LSD (.05)	2.3	2.3	4.1	4.1	2.9	3.3	3.0	1.2				
	C.V. (%)	3.0	2.8	5.8	7.2	6.6	4.4	4.7	4.9				

AUR=Aurora
BRK=Brookings
BTF=Brentford
DAY=Day County
GRO=Groton
HIG=Highmore
WAT=Watertown

Table 3. Uniform Regional Spring Wheat performance data.

Table 3-1 AGRONOMIC MEANS FROM 1994-1995 FOR ENTRIES IN THE HRSWURN SORTED BY YIELD, DESCENDING

VARIETY OR STATE NO.	YIELD BU/AC	TWT LB/BU	HD DAYS	HT CM	LD	DS
NO. LOCS:	31	31	26	31	14	5
SBE0050	51.1	57.5	29	78	2.7	26.9
SD3156	48.9	59.5	25	82	3.2	36.7
MN91309	47.5	58.3	26	75	2.5	34.5
ND678	46.9	58.7	29	95	2.8	11.4
MN91324	46.1	58.6	27	80	1.9	45.2
SD3151	46.0	58.6	25	80	2.6	43.8
BUTTE 86	45.8	58.4	26	86	3.1	35.0
STOA	45.6	56.6	29	92	3.6	35.2
N89-0562	44.3	57.5	28	70	2.7	37.6
ERA	42.4	55.3	33	78	2.3	39.5
BW173	42.0	57.5	31	90	3.0	31.7
CHRIS	34.1	56.6	31	96	5.1	28.7
MARQUIS	29.4	54.2	33	100	4.5	74.3
MEANS:	43.9	57.5	29	85	3.1	37.0

TESTS	YIELD	TWT	HD	HT	LD	DS
F-test:	37.6	7.6	93.4	99.9	6.1	3.1
LSD:	2.7	1.5	0.8	2.2	1.0	23.0
CV:	12.4	5.2	5.0	5.1	43.8	48.8

Table 4. 1996 Wheat Quality Council data.

SD3156

Sample Code:	B-CK	B-1	C-CK	C-1	M-CK	M-1	Average Grandin	Average SD3156
Wht Protein(14%mb):	14.2	13.6	15.1	13.7	15.8	14.7	15.0	14.0
Wheat Ash(14%mb):	1.63	1.55	1.57	1.63	1.53	1.43	1.58	1.54
Wheat Moisture(%):	10.3	10.6	10.4	10.5	11.6	11.0	10.8	10.7
Test Weight(lb/bu):	60.0	62.0	64.0	64.0	62.0	63.0	62.0	63.0
1000-KWT(grams):	33.0	31.4	40.1	36.4	36.7	35.1	36.6	34.3
Large Kernels(%):	74	68	92	84	86	84	84.0	78.7
Small Kernels:(%)	2	2	0	1	0	0	0.7	1.0
NIR Hardness:	80	78	104	87	101	87	95.0	84.0
Kernel Vitreousness(%):	30.0	23.4	83.5	38.7	95.3	83.5	69.6	48.5
Deoxynivalenol (ppm):	1.8	1.5	0.7	0.0	0.7	0.0	1.0	0.5
SKWCS HI:	70.1	67.5	70.9	65.4	76.4	63.7	72.5	65.5
Wheat FN:	398	405	378	379	360	406	379	397
Flour Protein(14%mb):	12.7	12.0	13.4	12.1	14.2	13.4	13.4	12.5
Flour Ash(14%mb):	0.37	0.38	0.37	0.35	0.40	0.31	0.38	0.35
Flour Moisture(%):	13.5	13.2	13.6	12.4	13.2	13.5	13.4	13.0
Flour Ext(%):	70.4	68.6	69.5	68.1	69.6	67.5	69.8	68.0
# .46 Ash Flour/cwt Wht:	75.0	74.2	77.1	75.3	75.7	76.5	75.9	75.4
Mill Value($):	1.94	1.92	2.08	1.97	2.03	2.10	2.02	2.00
Farino Abs(14%mb):	60.6	59.9	63.4	60.0	63.4	63.5	62.5	61.1
Farino Arrival Time(min):	2.1	2.2	2.7	3.0	3.5	4.5	2.8	3.2
Farino Peak Time(min):	6.2	8.2	6.7	7.4	8.6	6.4	7.2	7.3
Farino Stability(min):	12.5	11.0	13.2	12.9	12.6	10.0	12.8	11.3
Farino MTI(BU):	18.0	32.0	17.0	22.0	17.0	12.0	17.3	22.0
Bake Abs(14%mb):	61.5	60.6	63.6	60.9	63.9	63.3	63.0	61.6
Bake Abs. Rating:	3.8	2.9	4.5	2.9	4.6	4.3	4.3	3.3
Bake Mix Time Actual:	13.7	7.8	12.1	8.0	11.0	8.1	12.3	8.0
Bake Mix Time Rating:	5.1	3.8	4.4	3.3	4.1	3.0	4.5	3.4
Mix Tolerance Rating:	4.8	3.3	4.4	3.4	4.6	3.1	4.6	3.3
Out of Mixer Rating:	4.3	4.7	4.2	4.6	4.6	3.8	4.4	4.4
Out of Mixer Describe:	2.8	3.0	2.8	3.0	2.8	2.5	2.8	2.8
At Make Up Rating:	4.3	4.4	4.3	4.3	4.4	4.3	4.3	4.3
At Make Up Describe:	2.6	2.6	2.7	2.8	2.7	2.7	2.7	2.7
Loaf Volume Rating:	4.6	3.9	4.3	3.8	5.5	4.7	4.8	4.1
Crumb Color:	4.7	4.3	5.0	4.8	4.7	4.7	4.8	4.6
Crumb Grain:	4.3	4.2	3.9	3.9	3.3	3.3	3.9	3.8
Crumb Texture:	4.6	4.5	4.6	4.4	4.7	4.5	4.6	4.5
Overall Rating Baking:	4.7	4.1	4.5	3.8	4.9	4.0	4.7	3.9
Overall Wheat Quality Rating:	4.6	3.6	4.6	3.5	5.1	3.7	4.8	3.6

Rating Scores :	0	3	6
Bake Absorption :	Low		High
Bake Mix Time :	Short		Long
Mixing Tolerance :	Weak		Strong
Out Of Mixer :	Weak or Bucky		Extensible/Elastic
At Make Up :	Weak or Bucky		Extensible/Elastic
Loaf Volume :	Low		High
Crumb Color :	Yellow	Grey Dull Creamy	Bright White
Crumb Grain :	Irregular,open,thick	Open, thick	Close,elongated,fine
Crumb Texture :	Harsh	Coarse	Silky
Overall Ratings :	Poor		Excellent

Out of Mixer Describe:
1. Sticky-Weak
2. Tough-Bucky
3. Extensible/Elastic

At Make Up Describe:
1. Sticky-Weak
2. Tough-Bucky
3. Extensible/Elastic

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
SOUTH DAKOTA AGRICULTURAL EXPERIMENT STATION	SD 3156	Forge

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*	5. TELEPHONE *(include area code)*	6. FAX *(include area code)*
South Dakota State University Ag Hall 129 Brookings, SD 57007	605-688-4149	605-688-6065
	7. PVPO NUMBER 9800253	

8. Does the applicant own all rights to the variety? *Mark an "X" in appropriate block.* If no, please explain. [X] YES [ ] NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? [X] YES [ ] NO
If no, give name of country _____

10. Is the applicant the original breeder? If no, please answer the following: [X] YES [ ] NO

a. If original rights to variety were owned by individual(s):
Is (are) the original breeder(s) a U.S. national(s)? If no, give name of country _____

[ ] YES [ ] NO

b. If original rights to variety were owned by a company:
Is the original breeder(s) U.S. based company? If no, give name of country _____

11. Additional explantion on ownership *(If needed, use reverse for extra space):*

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original breeder, both the original breeder and the applicant must meet one of the above criteria.

The original breeder may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definition.